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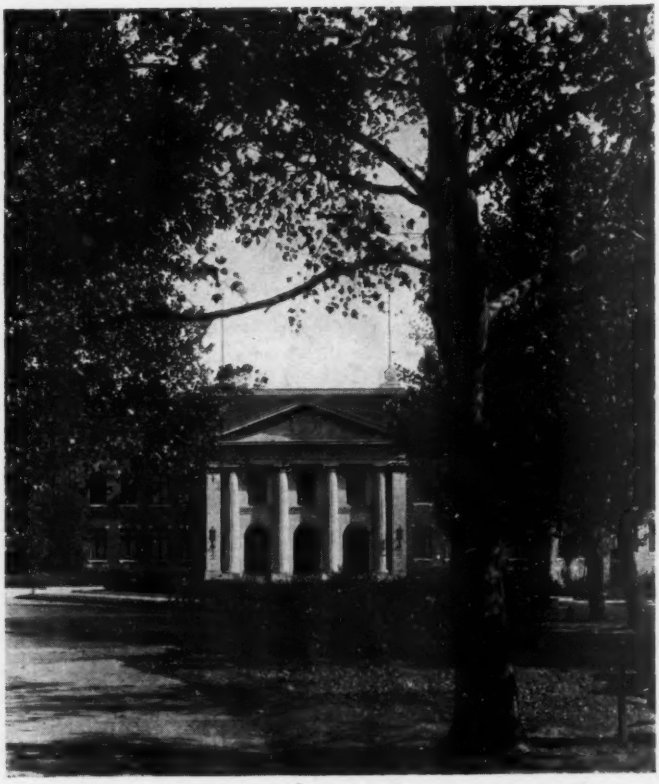

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Vol. 115. JUNE, 1943 No. 6

CONTENTS

Editorial 194

Articles:

Palisade Ratios for the Official Drugs of the Labiatae Family. By Gilbert Ullrich 196

Inter-American Health Program Goes Forward on a Large Scale—Office of Coordinator of Inter-American Affairs 207

U. S. P. Notes 214

A. Ph. A. to Meet in Columbus September 9-11, 1943 217

National Formulary Changes 218

Selected Abstracts 219

Solid Extracts 226

Book Reviews 230

Published monthly by the Philadelphia College of Pharmacy and Science
43rd Street, Kingsessing and Woodland Avenues, Philadelphia, Pa.

Annual Subscription, $3.00 Foreign Postage, 25 Cents Extra
Single Numbers, 30 Cents Back Numbers, 50 Cents

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa.
Under Act of March 3, 1879

Acceptance for Mailing at Special Rate of Postage Provided for in Section 1103
Act of October 3, 1917. Authorized February 15, 1920

EDITORIAL

WHY NOT FOLLOW CANADA'S LEAD?

IT is an interesting comparison to note the different approach employed by Canadians toward a Health Insurance Plan and that method adopted both in England and the United States.

There is every reason to believe that some form of health insurance will be demanded by large numbers of persons in our post-war program, or even before. The difficulty lies in the rather unfortunate juggling which is evident, to see whether the government, the medical professions or a coalition of both shall devise the details and scope of such an endeavor.

Organized medicine in Great Britain recently rejected unanimously the proposals outlined by the Ministry of Health under the now famous "Beveridge Plan," claiming that they refused to accept a situation in which, according to the *British Medical Journal,* "medical men would cease to exist as freely practising doctors and would become instead the whole-time employees of local authorities . . . It this happens, then doctors will no longer constitute an independent, learned and liberal profession but will instead form a service of technicians controlled by central bureaucrats and by local men and women entirely ignorant of medical matters."

In our own country legislation has been introduced in both the House and the Senate under the caption of a Unified National Social Insurance System (S. 1161; H. R. 2861). These bills were sponsored by Senators Wagner (New York) and Murray (Montana) and by Representative Dingell (Michigan). When one reads the provisions of this legislation it is evident that neither organized medicine nor pharmacy was consulted in developing its details. In fact it is unlikely that it even was graced by having been read by a physician before being submitted, as it does not, in places, employ accepted medical terminology.

Now it is clear that Congressmen, social-minded as they may be, cannot practice medicine even though it lies within their power to

enact legislation legalizing them to do so. It is also clear that, without the cooperation of the medical profession, no satisfactory health insurance plan can ever be implemented even though it might be technically sound. If the average American citizen were forced to decide upon the advice of either Congress or his physician on matters pertaining to health we can well imagine his choice.

Our government must recognize that professional groups do have certain unique responsibilities and privileges, and rightfully so, and that they at least deserve the same thoughtful consideration given to a labor union. Professional men are, as a rule, highly trained and well educated persons who have been taught to think for themselves and carefully evaluate any plan or procedure placed before them rather than to follow blindly where they are led, be the path rocky or smooth.

Canada has avoided the obvious error made in our own country and elsewhere by having all the health professions cooperate with the government in devising proposals acceptable to all concerned, and thus real progress and human benefit may be expected to follow.

If efforts so far expended in Washington continue along the present trend some government agency must be set up to train a whole new army of physicians, dentists, pharmacists, et al., who are taught blind adherence to bureaucratic dogma and who know not what freedom of action means. Then and only then may the views of our present practitioners be ignored and health or the absence of it become subject to complete political control.

It does not take a very keen analyst to see that medical technology has made tremendous strides in recent years in the saving of human lives and increasing both health and happiness, whereas political demagoguery has set every man against his neighbor until one must be a wizard to tell friend from foe.

Which group the more deserves our trust? L. F. Tice.

PALISADE RATIOS FOR THE OFFICIAL DRUGS OF THE LABIATÆ FAMILY

By Gilbert Ullrich, B. Sc.

Introduction and History

ZORNIG and Weiss (8), during the course of their anatomical studies of leaves, discovered that the average number of palisade parenchyma cells lying beneath one upper epidermal cell was of diagnostic significance. They used this as the basis of establishing the identities of various species of the Compositæ.

Wallis and Dewar (6) continued the work and were first to use the term, palisade ratio, defining it as follows: "The total number of palisade cells lying beneath four contiguous upper epidermal cells when divided by four gives a figure which is the palisade ratio of the leaf." Wallis and Dewar also found that variation in the palisade ratio was independent of the position on the leaf. They used the palisade ratio in the differentiation of official Barosma betulina from other species of Barosma.

According to Markwell and Cross (5), the palisade ratio may be used in the detection of Ailanthus when this is used as an adulterant of rubbed spearmint.

Dewar (1, 2, 3) has investigated the palisade ratio of Digitalis lutea, D. lanata and D. thapsi.

The leaves of Scopolia carniolica, Solanum nigrum, and Atropa belladonna were examined in great detail by Wallis and Forsdike (7). They determined the palisade ratios of these leaves in four different positions, base, margin, center, and apex, and confirmed the fact that the palisade ratio exhibits no constant variation with position in the leaf.

It has also been established by Wallis and Forsdike that the variation in the habitat of a given species does not change the palisade ratio—the palisade ratio of a given species is constant regardless of habitat. These two investigators also state that the palisade ratio for a given species does not change from year to year or with the age of a leaf.

Feinstein and Slama (4) have determined the palisade ratio to be of no value in the differentiation of official Hyoscyamus, Digitalis, and Stramonium, but they did, however, find that the palisade ratio could be used in the differentiation of official Belladonna from official Hyoscyamus, Digitalis, and Stramonium.

From the foregoing discussion, it is evident that the palisade ratio is, in certain cases, of diagnostic value, and that there is a vast amount of experimental data which must be obtained by investigators of the future in order that the true value of this ratio may be utilized to the fullest by those interested in employing new tools in the study of crude drugs.

Purpose

With the foregoing in mind, the writer of this paper investigated the palisade ratios of the official drugs of the Labiatæ family—Scutellaria lateriflora, Mentha piperita, Mentha spicata, Nepeta cataria, Thymus vulgaris, and Salvia officinalis. In the case of each drug, the following points were carefully considered:

1. What are the average palisade ratios in the leaves of the above-mentioned plants?
2. Can the leaves be differentiated easily by such values?
3. Are the palisade ratios approximately constant for the various positions, base, margin, center, and apex, in the leaf of a given species?
4. Can a key on the basis of the palisade ratios obtained be constructed for the identities of the official drugs of the Labiatæ family?

Experimental Method

The leaves used in the experimental work were obtained from the crude drug stockroom of the biology department of the Philadelphia College of Pharmacy and Science. All of the specimens were in the dried condition and it was necessary to soak them three or four hours in water. After the leaves became pliable they were spread out on a sheet of white paper and by means of a sharp razor, segments 2-3 mm. square, except Thymus which was too small, were taken from the positions of base, apex, margin, and center. The following illustration shows these positions:

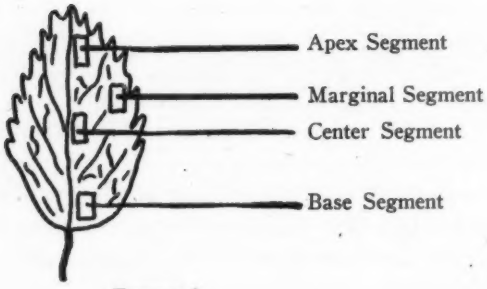

FIGURE 1

The segments were immediately placed in properly labelled test tubes which contained 3-4 milliliters of clearing solution. The clearing reagent consisted of fifty grams of chloral hydrate dissolved in twenty milliliters of distilled water. The leaf segments were allowed to remain in the clearing solution until they became almost transparent—the time required for this varied from 3 to 15 days, depending upon the material. The areas were then mounted on clean slides with cover slips and examined under the compound microscope at 450 diameters with direct light. The mounting medium employed was Berlese Mountant, the formula of which is as follows:

Distilled water	10 ml.
Dextrose	5 gm.
Acacia	8 gm.
Chloral hydrate	74 gm.
Glacial Acetic Acid	3 ml.

Dissolve the dextrose in water, dissolve the gum acacia in the solution, then the chloral hydrate, finally add the glacial acetic acid, and thoroughly mix.

This formula was suggested by Wallis and Forsdike in the Quarterly Journal and Yearbook of Pharmacy, 11; 700, 1938.

The outlines of four contiguous upper epidermal cells were observed and by adjusting the focus back and forth the outlines of the palisade parenchyma cells lying beneath these epidermal cells were counted. All those palisade parenchyma cells whose one-half area or more came within the boundaries of the epidermal cells were counted, as well as the palisade parenchyma cells whose entire area came within the boundaries of the epidermal cells. All counts were made under epidermal cells of approximately the same size and as far removed

from veins as possible for in such regions the palisade parenchyma cells diminish considerably in size (diameter). A piece of light blue glass was placed over the mirror of the microscope; this gave a light blue field which reduced considerably the eyestrain during the counts. The figure obtained after each count was divided by four—this resultant figure being the palisade ratio as defined by Wallis and Dewar.

For each species, five leaves were selected, and from each of these leaves as previously mentioned, four representative segments were taken, one each from base, apex, margin, and center. Five counts were made of each section. Averages were then computed in the way indicated by charts 1, 2, 3, 4, 5. Thus the average palisade ratio finally obtained was the result of one hundred determinations.

Fig. 2 shows the appearance of a typical, counted field from an apex segment of Mentha piperita. The palisade ratio is 6.5. Note that the palisade and epidermal cells are clearly demarked.

In the case of Thymus vulgaris, the leaves were too small to divide into sections and were therefore mounted whole, the groups of counts being made in the proper positions of base, apex, margin, and center.

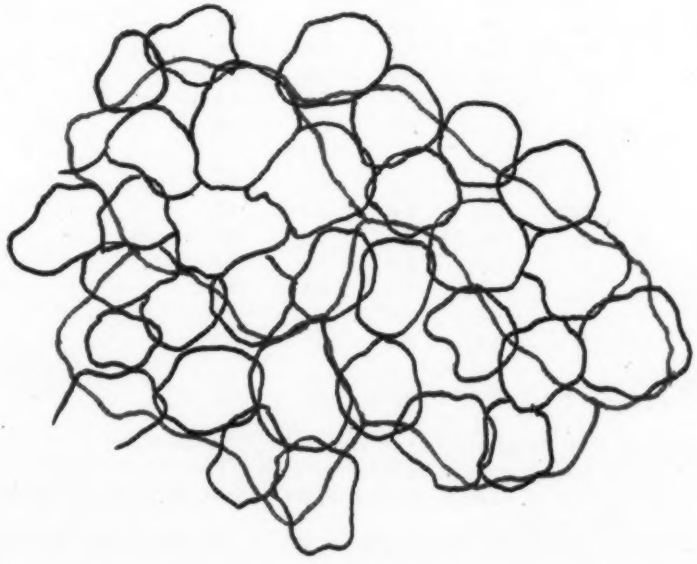

FIGURE 2
Apex Segment. Palisade Ratio equals 26/4 equals 6.5

DATA AND DISCUSSION

Scutellaria Lateriflora—Palisade Ratios

Location	Leaf 1	Leaf 2	Leaf 3	Leaf 4	Leaf 5	Location Average	Average for Species
	6.2	5.7	8.2	6.0	5.7		
	6.0	5.5	7.0	5.2	6.0		
Base	6.5	7.0	8.0	6.0	6.2	6.3	
	5.7	5.5	6.2	7.2	6.5		
	8.0	5.5	8.2	4.2	7.7		
	Av. 6.4	5.8	7.5	5.7	6.4		
	6.7	6.7	6.5	6.0	8.7		
	7.0	6.0	7.7	6.7	7.7		
Margin	6.2	7.0	7.0	5.2	8.0	6.6	
	4.5	7.0	6.0	5.7	8.2		
	6.5	6.7	7.0	6.0	7.7		
	Av. 6.1	6.6	6.8	5.9	8.0		
	6.2	6.7	6.5	7.2	6.7		
	6.7	6.7	6.2	8.0	9.0		
Center	6.2	7.0	6.0	5.0	6.7	6.8	
	8.0	7.2	8.0	4.0	7.0		
	9.5	6.0	7.0	6.0	7.2		
	Av. 7.3	6.7	6.7	6.0	7.3		
	5.2	7.0	7.5	6.0	6.0		
	8.0	7.7	6.5	5.5	5.7		
Apex	5.5	6.0	5.5	5.5	6.2	6.0	
	5.2	5.7	7.0	6.0	6.5		
	4.7	5.7	5.2	6.5	6.0		
	Av. 5.7	6.4	6.3	5.9	6.0		
Average for each Leaf	6.4	6.3	6.8	5.8	6.9		6.4

A careful study of the above chart reveals the following facts:

1. The average palisade ratio for the leaves of Scutellaria is 6.4.
2. There is no marked variation in the palisade ratio in passing from base to apex.
3. The lowest value for the palisade ratio as recorded in the above chart is 4.0.
4. The highest value for the palisade ratio as recorded in the above chart is 9.5.

MENTHA PIPERITA—PALISADE RATIOS

Location	Leaf 1	Leaf 2	Leaf 3	Leaf 4	Leaf 5	Location Average	Average for Species
	5.5	6.5	5.4	7.0	6.7		
	5.2	6.2	5.2	6.2	8.0		
Base	5.5	7.0	7.2	6.4	5.7	6.1	
	4.5	6.0	7.0	7.2	6.5		
	4.7	5.2	5.2	5.5	8.2		
	Av. 5.1	6.2	6.0	6.4	7.0		
	7.2	8.0	6.4	6.2	6.0		
	5.5	8.5	6.2	6.4	5.5		
Margin	6.0	7.5	6.0	5.7	7.5	6.5	
	7.7	6.7	5.0	7.2	6.5		
	6.7	9.2	5.2	6.5	5.0		
	Av. 6.6	7.9	5.7	6.4	6.1		
	5.7	6.2	6.7	7.2	7.0		
	6.5	8.2	5.5	6.2	7.5		
Center	5.5	7.2	6.7	5.2	7.5	6.3	
	5.5	5.7	7.5	5.5	7.2		
	4.2	8.0	6.0	5.5	5.7		
	Av. 5.5	6.8	6.4	5.9	6.9		
	6.0	6.5	5.0	6.5	9.0		
	5.0	7.0	5.0	5.7	7.5		
Apex	6.2	6.2	6.2	6.5	8.0	6.4	
	5.6	6.2	7.0	6.0	7.5		
	6.7	7.2	5.2	6.2	8.5		
	Av. 5.9	6.6	5.6	6.1	8.1		
Average for each Leaf	5.8	6.8	5.9	6.2	7.0		6.3

A careful study of the above chart reveals the following facts:

1. The average palisade ratio for the leaves of Mentha piperita is 6.3.
2. There is no marked variation in the palisade ratio in passing from base to apex.
3. The lowest value for the palisade ratio as recorded in the above chart is 4.2.
4. The highest value for the palisade ratio as recorded in the above chart is 9.2.

MENTHA SPICATA—PALISADE RATIOS

Location	Leaf 1	Leaf 2	Leaf 3	Leaf 4	Leaf 5	Location Average	Average for Species
	5.5	6.7	7.5	7.5	6.5		
	6.0	6.5	9.2	6.0	6.5		
Base	4.5	7.0	9.0	6.5	5.2	6.4	
	6.5	5.5	6.2	7.0	6.0		
	6.0	5.2	7.0	6.7	5.5		
	Av. 5.7	6.2	7.7	6.7	5.9		
	7.5	5.5	8.0	7.0	6.0		
	8.2	5.0	9.2	6.2	6.5		
Margin	6.5	5.7	5.0	6.5	5.2	6.8	
	7.2	7.0	9.0	8.5	7.0		
	6.0	7.0	8.7	7.5	5.5		
	Av. 7.0	6.0	7.9	7.1	6.0		
	4.7	7.0	5.0	5.5	6.2		
	4.2	5.2	9.0	6.5	5.5		
Center	4.0	6.5	8.7	6.0	6.7	6.0	
	4.7	6.5	6.2	7.0	6.2		
	5.2	6.5	8.0	5.2	5.0		
	Av. 4.6	6.3	7.3	6.0	5.9		
	5.5	6.7	7.5	6.5	4.7		
	7.0	6.5	9.0	5.0	6.5		
Apex	4.2	5.2	6.2	4.7	5.5	6.0	
	6.2	5.0	7.0	5.0	7.0		
	5.5	6.2	5.2	5.2	7.5		
	Av. 5.6	5.9	6.9	5.3	6.3		
Average for each Leaf	5.7	6.1	7.4	6.2	6.0		6.2

A careful study of the above chart reveals the following facts:

1. The average palisade ratio for the leaves of Mentha spicata is 6.2.
2. There is no marked variation in the palisade ratio in passing from base to apex.
3. The lowest value for the palisade ratio as recorded in the above chart is 4.0.
4. The highest value for the palisade ratio as recorded in the above chart is 9.2.

NEPETA CATARIA—PALISADE RATIOS

Location	Leaf 1	Leaf 2	Leaf 3	Leaf 4	Leaf 5	Location Average	Average for Species
	4.7	4.5	5.0	5.0	4.0		
	4.2	5.2	5.5	4.0	4.5		
Base	5.2	4.7	5.0	5.0	6.0	4.6	
	4.7	6.0	4.7	5.5	3.5		
	3.2	3.2	3.7	5.0	5.7		
	Av. 4.4	4.7	4.7	4.9	4.7		
	5.5	6.0	6.5	4.7	5.2		
	5.0	4.5	3.5	4.0	5.7		
Margin	5.0	4.7	4.5	5.2	4.2	4.7	
	4.5	5.2	3.0	4.7	4.5		
	4.2	5.0	4.2	5.2	5.0		
	Av. 4.8	5.0	4.3	4.7	4.9		
	2.5	4.2	5.5	4.7	5.7		
	4.5	6.5	5.0	4.5	4.5		
Center	5.0	3.2	4.0	5.5	5.0	4.7	
	4.2	5.0	3.5	5.0	6.0		
	5.2	6.5	4.5	5.0	4.2		
	Av. 4.2	5.0	4.5	4.9	5.0		
	5.2	5.0	4.0	5.2	5.0		
	5.2	4.0	4.2	4.0	5.7		
Apex	6.0	4.2	5.0	4.7	6.0	4.9	
	5.5	5.0	5.0	4.5	4.5		
	5.2	5.7	5.7	5.7	4.7		
	Av. 5.4	4.7	4.7	4.8	5.1		
Average for each Leaf	4.7	4.8	4.5	4.8	4.8		4.7

A careful study of the above chart reveals the following facts:

1. The average palisade ratio for the leaves of Nepeta cataria is 4.7.
2. There is no marked variation in the palisade ratio in passing from base to apex.
3. The highest recorded value for the palisade ratio according to the above chart is 6.5.
4. The lowest recorded value for the palisade ratio according to the above chart is 2.5.

THYMUS VULGARIS—PALISADE RATIOS

Location	Leaf 1	Leaf 2	Leaf 3	Leaf 4	Leaf 5	Location Average	Average for Species
	3.0	2.0	3.0	4.0	3.5		
	2.2	2.0	2.7	4.7	4.0		
Base	3.0	2.0	2.5	4.0	3.0	3.0	
	3.2	1.7	3.0	3.2	3.7		
	3.0	2.2	3.0	4.7	2.5		
	Av. 2.8	1.9	2.8	4.3	3.2		
	4.0	2.5	3.5	4.7	3.2		
	4.0	1.7	3.0	4.2	4.0		
Margin	3.5	1.2	3.5	4.0	5.5	3.4	
	3.7	1.7	3.0	4.0	3.7		
	3.7	2.0	3.0	5.2	4.0		
	Av. 3.7	1.8	3.2	4.4	4.0		
	3.5	1.5	3.5	5.2	4.5		
	3.0	1.0	3.0	5.0	3.0		
Center	2.7	2.0	3.7	5.5	4.2	3.5	
	3.0	1.7	3.5	4.0	3.0		
	3.5	1.7	3.5	3.5	4.0		
	Av. 3.1	1.7	3.4	4.6	4.7		
	2.2	1.7	3.5	5.2	2.0		
	2.5	1.5	3.5	5.7	2.5		
Apex	2.5	2.0	3.7	4.5	3.0	3.0	
	3.0	2.2	3.5	4.0	3.2		
	2.7	2.0	2.7	5.0	3.0		
	Av. 2.5	1.8	3.5	4.9	2.7		
Average for each Leaf	3.0	1.8	3.2	4.5	3.6		3.2

A careful study of the above chart reveals the following facts:

1. The average palisade ratio for the leaves of Thymus vulgaris is 3.2.
2. There is no marked variation in the palisade ratio in passing from base to apex.
3. The lowest value for the palisade ratio as recorded in the above chart is 1.0.
4. The highest value for the palisade ratio as recorded in the above chart is 5.7.

Salvia Officinalis

Five leaves of Salvia officinalis were sectioned and cleared by the method described in the procedure. Upon microscopic examination, however, it was found impractical to make the palisade ratio counts because of two facts: (1) practically every upper epidermal cell is modified into a trichome; (2) numerous raised areas are present on the upper surface of the leaves. Both of these structures interfered with the proper focusing of the microscope.

Summary

1. A study was made of the palisade ratios in the leaves of the official drugs of the Labiatæ family. The average palisade ratios are as follows:

Scutellaria lateriflora	6.4
Mentha piperita	6.3
Mentha spicata	6.2
Nepeta cataria	4.7
Thymus vulgaris	3.2
Salvia officinalis	No determination.

2. The author of this paper was unable to determine the average palisade ratio in the leaves of Salvia officinalis because of the undulating hairy epidermis.

3. The leaves of Scutellaria lateriflora, Mentha piperita, and Mentha spicata cannot be differentiated by their average palisade ratios.

4. The leaves of Nepeta cataria may be differentiated from the leaves of Scutellaria lateriflora, Mentha piperita, and Mentha spicata by means of the average palisade ratio.

5. The leaves of Nepeta cataria may be differentiated from the leaves of Thymus vulgaris by means of the average palisade ratio.

6. The leaves of Thymus vulgaris may be differentiated from the leaves of Scutellaria lateriflora, Mentha piperita, and Mentha spicata by means of the average palisade ratio.

7. There is no marked variation in the palisade ratio of a given leaf in going from base to apex.

8. From the foregoing facts, it is evident that the palisade ratio may be of diagnostic value, and the author of this paper firmly believes that it may be used, in certain cases, as a means of differentiating the powders and leaf fragments of one species from those of another.

Acknowledgment

The author wishes to express his appreciation to Dr. M. S. Dunn, head of the Biology Department, under whose direction and guidance the experimental work was accomplished. Appreciation is also extended to Professor E. H. MacLaughlin whose many helpful hints and suggestions were of great value. Many thanks are also expressed to Mr. F. M. White for his assistance in the manipulation of the camera lucida.

BIBLIOGRAPHY

1. Dewar: *Jour. Pharm. and Pharmacol.*, *6*:448 (1933).
2. Dewar: *Jour. Pharm. and Pharmacol.*, *7*:15 (1934).
3. Dewar: *Jour. Pharm. and Pharmacol.*, *7*:342 (1934).
4. Feinstein and Slama: *J. A. P. A.*, *29*:370 (1940).
5. Markwell and Cross: *Analyst*, *60*:748 (1935).
6. Wallis and Dewar: *Jour. Pharm. and Pharmacol.*, *6*:347 (1933).
7. Wallis and Forsdike: *Quart. Jour. and Yrbk. Pharm.*, *11*:700 (1938).
8. Zornig and Weiss: *Arch. Pharm. Berl.*, *263*:462 (1925).

A New Sulfonamide Announced

A new sulfonamide, "Sulfamerazine" was recently announced, having been developed in the laboratories of Sharpe & Dohme of Philadelphia. Clinical reports were published both in the *Journal of Pharmacology and Experimental Therapeutics* and the *American Journal of the Medical Sciences.*

Sulfamerazine chemically is 2-sulfanilamido 4-methylpyrimidine and it might be described as sulfamethyldiazine. It is claimed to be more rapidly absorbed from the gastrointestinal tract than sulfadiazine and more slowly eliminated by the kidneys. Thus, smaller or less frequent doses of sulfamerazine are necessary to produce and maintain therapeutic concentrations in the blood. The slower excretion by the kidneys, together with the fact that both sulfamerazine and its acetylated form are more soluble in neutral and acid urine than in the case of sulfadiazine, greatly reduces the possibility of the formation of drug concretions.

Sulfamerazine is administered in the treatment of infections caused by pneumococci, streptococci, meningococci and gonococci and its possible use as a prophylactic agent toward certain infections is of interest.

INTER-AMERICAN HEALTH PROGRAM GOES FORWARD ON LARGE SCALE *

ALONG the Amazon go floating dispensaries, bringing doctors and drugs to new settlements of rubber workers hard to reach by land.

Into backwater swamps of Haiti, in sight of new fiber plantations, march anti-malaria squads with drainage equipment and larvacids in an all-out war on the mosquito.

From Guatemala to Paraguay rise new clinics and hospitals to fight tuberculosis, a principal cause of death in the Americas.

In all these ways and a hundred more, a great inter-American health campaign goes forward today in fourteen American Republics, some of which are sites of bases for hemisphere defense and all of which produce strategic materials for the arsenals of the United Nations.

The program is being carried out cooperatively by agencies of the Latin-American governments and the institute of Inter-American Affairs, a subsidiary of the Office of Inter-American Affairs, headed by Nelson A. Rockefeller, in Washington.

As its contribution to the inter-American "Battle for Health," the Institute has assigned scores of doctors, nurses, engineers, and other technicians, supplementing the contributions of the cooperating American Republics.

By safeguarding workers, the health campaign helps assure the flow of rubber, fibers, metals, vegetable oils, and other materials to the factories of North America. It also helps lift the living standards of the Americas for the long run.

Chief consultant in this hemispheric program is Dr. George C. Dunham, director of the Health and Sanitation Division of the Coordinator's office. A modern version of the physician on horseback, he is an airplane doctor with 25,000,000 patients. During a ten-month period he managed to ride his circuit five times and covered 57,497 miles. His tall, brawny, tireless figure has become a familiar

* From Office of Coordinator of Inter-American Affairs, Washington, D. C.

sight in Port-au-Prince, Quito, Lima, Asuncion, La Paz and Rio de Janeiro. He is known to hundreds of public health authorities in the Americas.

He has dispatched parties into the vast Amazon Valley, up and down the length of the Andes, into cities and jungles, hot climates and cold. His men are resourceful technicians who know how to cope with snakes, fleas, sting rays, electric eels, carnivorous ants and—most important—with the anopheles mosquito.

On the wall of Dr. Dunham's office in the Commerce Building is a large map of Central and South America, speckled with varicolored pins. Blue means building projects: hospitals, dispensaries, clinics. Black means sanitary engineering: sewage plants, water supply, drainage ditches. Red stands for medical units for treatment of disease. Green indicates health education and the training of nurses. Brown shows dispensary launches along the Amazon and its tributaries.

There are hundreds of these pins. They march down the map through Haiti, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panama. They go down South America's west coast through Venezuela, Colombia, Ecuador, and Peru. They swing over eastward to Bolivia, Paraguay and Brazil.

They cover the great ranges of the Andes. They sweep 2,200 miles across the Amazon Valley.

To further the program various republics have set up a "Co-operative Inter-American Public Health Service."

More than 600 separate projects, units of operation, surveys and other types of public health activity have been started or scheduled. What are these projects?

They are hospitals and health centers in mountains and jungle. They are medical and nursing schools. They are market places and slaughter houses for clean handling of food. They are sewers and disposal plants and pure water systems in the cities. They are clinics and doctors and surgeons, storehouses of medical supplies, chemicals and disinfecants, drugs and millions of atabrine tablets to combat malaria.

The blue print for the health program was laid down in January, 1942, at the Rio de Janeiro Meeting of the American Foreign Ministers where it was agreed to strengthen the Americas by strengthening their health and well-being.

The program got under way two months later in Ecuador. Since then dozens of technicians have gone south on survey trips. Local health authorities have joined in mapping projects. Equipment, medicines and supplies have flowed southward, and the widely diverse projects have taken shape. Many have been completed. New ones are being mapped continuously.

The program finds its largest scope in the 2,000,000 square miles of the Amazon basin. Here is the largest potential source of rubber and other tropical products available to the United Nations. Into this area has begun a large migration of workers.

But there are enemies waiting for these workers in the jungle. The dangerous adversaries are malaria, typhoid, dysentery, smallpox. And so, with this army of rubber-tappers, goes a "convoy" of doctors, nurses and sanitary engineers.

With the assistance of the Health and Sanitation Division, Brazil has set up in the Amazon one of the greatest programs of preventive medicine in history.

Twenty-two hundred miles across the valley, like trading posts in a far-flung jungle, a chain of health stations is being forged.

Gateway to this rubber empire is Belem, which lies 90 miles from the open Atlantic near the junction of the Para River and the mouth of the Amazon. Belem is the assembly point and jumping-off place for the trek of Brazilian workers westward.

From the moment the rubber-tapper begins the march to the rubber forests, his life and well-being are guarded as never before.

Along the trails to Belem a dozen rest stations are being built to receive rubber workers moving overland. The camps contain bathing and laundry facilities, dispensaries and isolation wards. Here the worker receives shelter, food, water, clothing. He receives a medical examination, inoculations against yellow fever and smallpox, and anti-malaria drugs, free of charge.

In Belem itself, more than 700 men have been at work building dikes and tide gates, cleaning and straightening channels and small streams, draining low areas to eliminate breeding places for mosquitoes and prevent malaria.

Belem also is the site of a laboratory for studying mosquito specimens in the war on malaria. Hundreds of mosquito fighters in the Amazon Basin send specimens to Belem in the search for malaria carriers.

From Belem inland, for 2,200 miles, Brazil is engaged in the construction of five major hospitals and at least fifty dispensary infirmaries to cover towns of a thousand population or more. Of the dispensaries, thirty-five are to be on launches floating on a circuit along the Amazon and its tributaries. Some of these health stations are in operation.

They will extend eventually all the way to Guayaramerim, where the Mamere River forms a boundary between Brazil and Bolivia, and to Iquitos and Tingo Maria, in the Amazon headwaters of Peru, on the eastern slopes of the Andes.

Secondary headquarters of the program have been established nearly 1,000 miles up the Amazon from Belem at Manaos, capital of Brazil's first rubber boom, where an opera house remains as a memento. Also included are projects for drainage, sewage, water supply, personnel training and the distribution of a million tablets monthly of atabrine, free of charge.

Atabrine distribution, stepped up by newspaper and radio campaigns, is producing results. In one area formerly fifteen per cent of the population were afflicted by malaria; now the incidence is down to only two or three per cent.

Employed on the program are 1,500 Brazilians, of whom forty are doctors and seven are engineers. They are being assisted by a field party of United States technicians headed by Dr. Kenneth C. Waddell, noted for his pioneering health work with the Ford rubber plantations in the Amazon Valley.

Similar health programs have been launched by other nations with territories in the Amazon Valley, including Colombia, Peru and Bolivia.

The health work is far advanced in Ecuador, where thirty-four separate projects are in progress. In Quito, the capital, the first nursing school completed under the hemisphere health program is in operation, a tribute to cooperation among almost a dozen Ecuadoran and United States agencies.

In a modernized building on the grounds of the Eugenio Espejo Hospital, thirty girls in the powder blue uniform of the probationer have begun a three-year course that will meet the rigid standards of the International Council of Nurses. The students receive free tuition, uniforms, textbooks, materials, meals and living quarters.

In Quito and Guayaquil, Ecuador's principal port, hospitals and laboratories are taking shape, modern sewers are being installed and drainage programs undertaken. In addition to the nursing school, the program in Quito calls for a 100-bed hospital for infectious diseases, a 200-bed maternity hospital, a complete health center to house the country's National Health Service and its many clinics, laboratories for the municipal health department and a new market place.

In Guayaquil the program calls for a tuberculosis hospital, one for infectious diseases and a large maternity hospital, the addition of men's and children's pavilions at other institutions, a new building for the medical school, and the addition of an auditorium and six laboratories to the Institute de Higiene.

In Chimborazo Province, a war of extermination is being waged against rats and guinea pigs, carriers of bubonic plague. At Salinas, site of a United States military and naval base, another sanitary campaign is under way.

Scores of Ecuadoran technicians and more than 1,200 workmen have been engaged in work which has become an outstanding example of inter-American cooperation.

In Bolivia, a central office and supply post has been set up at Cachabanba. The Bolivian program extends the Amazon basin work with malaria control and pure water supplies the most pressing problems.

Paraguay's health program has seen construction begun on a large health center at Asuncion, the capital, to house the National Ministry of Health. The center will include clinics for treatment of disease. Sites for other health centers in Paraguay have been selected. Projects include sewage and water supply facilities, hospitals, training of nurses and technicians and a tuberculosis sanatorium at Asuncion.

The first health and sanitation projects in Haiti have been completed. This work includes canals and drainage of marshlands for malaria control in the Carrefour Lighthouse area of Port-au-Prince, the Haitian capital; similar sanitation work at Bizoton; and construction of water and sewage facilities at Fort Lamentin.

Nearly a score of projects have been started or planned for Port-au-Prince and other Haitian communities. These involve malaria work, construction of market places, improvement of water supply and other sanitation facilities. The market places serve as centers for dissemination of health information. At Cap-Haitien a malaria control project is under way to protect workers on a 5,000-acre project for growing sisal, a strategic material.

In Peru a program has been launched to bring hospitals to its citizens, wherever they are. For example, San Martin, capital of a province, is almost unreachable, except by plane. It needs a hospital. So materials were flown in by plane to build the hospital.

Tingo Maria, 520 miles from Lima in the Andes, is the center of a new agricultural colony, where crops thrive and disease organisms as well. So in Tingo Maria has risen a new hospital, with water and sewage systems.

Chimbote, north of Lima, is a seaport and center of a coal and iron area. Through it comes the Pan-American highway. Plans for Chimbote include a hospital and health center, malaria control and sewage disposal.

The Peruvian program includes dispensary launches for Peru's Amazon area and health center in Lima, the capital.

In Central America, from Guatemala to Costa Rica, the Institute of Inter-American Affairs is cooperating in more than seventy-five health and sanitation projects. They also include an abbatoir in San Jose, Costa Rica; a 300-bed hospital in Guatemala City; a tuberculosis dispensary in Tegucigalpa, the capital of Honduras; a program of tuberculosis control in Nicaragua; and a nurses' training school at Managua, the Nicaraguan capital.

Running through the fabric of this over-all health program are a number of subsidiary campaigns against tuberculosis, leprosy, yaws, typhus. Seven countries have launched projects to lift their nursing professions to the highest modern standards.

The projects call for reorganization of existing nurses' schools, establishment of new ones for advanced and brush up courses for nurses.

Assisting in the work is the United States Public Health Service and the hemisphere-wide Pan-American Sanitary Bureau. They supply teacher-nurses, buildings, funds, and texts and lay out courses of instruction.

So goes forward the most imposing inter-American health program yet undertaken.

A public health crusader in the tradition of Walter Reed, Carlos Finlay and William Gorgas, Dr. Dunham has been working in the field of tropical medicine almost three decades. He is a graduate of the University of Oregon Medical School, received an M. A. degree from George Washington University and doctorate of Public Health from Johns Hopkins. He also studied in the London School of Tropical Medicine. An army doctor more than half his life, he has taught in the Army Medical College and served as public health adviser to the Governor General of the Philippine Islands.

His textbook on "Military Preventive Medicine" is a standard work on the subject. Recently Chiang Kai Shek had the book microfilmed and sent to China by plane to help reduce disease in China's armies.

Speaking of the inter-American "Battle for Health," Dr. Dunham says:

"These projects, in keeping with the Rio development program, have been planned for immediate wartime needs in connection with hemisphere defense and development of rubber, fibers and other tropical industries.

"But, when the war is over, the hospitals, nursing schools, sewage, water and other sanitation facilities will remain to become enduring contributions to the health of our neighboring republics.

"The health and sanitation program should represent, in postwar retrospect, one of the notable achievements of friendship and unity of action among the Americas in these crucial years."

U. S. P. NOTES

U. S. P. Multiple-Packaging Size Limitation for Injections Deferred Until Further Notice

THE following action becomes effective immediately and is to remain in force until rescinded by official action:

Due to the great difficulty at this time in complying with the U. S. P. XII multiple-packaging limitation for injections which restricted packages to a ten-average dose size, the date on which the multiple packaging provisions for injections is to become official is postponed as of May 1, 1943, and is subject to later official notice. This action is partially due to the grave shortage of packaging materials and labor due to the war.

This provision is set forth in the U. S. P. XII, pages 220 and 221, as follows:

> "Each multiple-dose package of an intramuscular, subcutaneous, or intracutaneous injection is to contain a total volume of the Injection equivalent to not more than the volume required for 10 *U. S. P. average doses* unless otherwise stated in the individual monograph."

The date upon which this requirement was to become official was postponed until May 1st, 1943, by U. S. P. action through an advance release of a U. S. P. XII Sheet Supplement.

An attempt will be made to study thoroughly the multiple-dose provision as it affects the individual injections at present official. This study will make possible the presentation at a later date of either a general provision or perhaps a regulation for each individual monograph as was suggested at the recent conference.

Revised U. S. P. XII Formulas for Camphorated Tincture of Opium (Paregoric), Syrup of Ipecac and Compound Tincture of Gentian

To conserve glycerin the modification of the following formulas becomes effective immediately and the change is to remain in force until rescinded by official action:

Syrupus Ipecacuanhæ, page 453—Change the formula for *Syrup of Ipecac* to read as follows:

Fluidextract of Ipecac	70 cc.
Syrup, a sufficient quantity,	
To make	1000 cc.

Mix the fluidextract with enough syrup to make the product measure 1000 cc. Mix thoroughly.

Tinctura Gentianae Composita, page 511—Change the formula for *Compound Tincture of Gentian* to read as follows:

Gentian, in moderately coarse powder	100 Gm.
Bitter Orange Peel, in moderately coarse powder	40 Gm.
Cardamom Seed, in moderately coarse powder	10 Gm.
To make	1000 cc.

Prepare a tincture by Process P, page 506, packing the mixed drugs lightly and using diluted alcohol as the menstruum. Macerate the drugs from 12 to 16 hours, and then percolate at a moderate rate.

Tinctura Opii Camphorata, page 516—Change the formula for *Camphorated Tincture of Opium* (*Paregoric*) to read as follows:

Tincture of Opium	40 cc.
Oil of Anise	4 cc.
Benzoic Acid	4 Gm.
Camphor	4 Gm.
Sucrose	65 Gm.
To make	1000 cc.

Dissolve the ingredients in 900 cc. of diluted alcohol, add 10 cc. of glycerin, and then sufficient diluted alcohol to make the product measure 1000 cc. Agitate the mixture and filter.

Camphorated Tincture of Opium may also be prepared as follows:

Powdered Opium	4.3 Gm.
Oil of Anise	3.8 cc.
Benzoic Acid	3.8 Gm.
Camphor	3.8 Gm.
Sucrose	61.7 Gm.
To make	1000 cc.

Macerate the ingredients for 5 days, with occasional agitation, in a mixture of 900 cc. of diluted alcohol and 9.5 cc. of glycerin. Then filter, and pass enough diluted alcohol through the filter to obtain 950 cc. of total filtrate. Assay a portion of this filtrate as directed below, and dilute the remainder with a sufficient quantity of diluted alcohol containing, in each 100 cc., 0.4 cc. of oil of anise, 0.4 Gm. of benzoic acid, 0.4 Gm. of camphor, 6.5 Gm. of sucrose, and 1 cc. of glycerin, to produce a Tincture containing, in each 100 cc., 0.04 Gm. of anhydrous morphine.

Free Supplement to U. S. P. XII

Notice is hereby given to owners of all copies of the U. S. P. XII to fill in and mail the post card order which is tipped inside the back cover of the U. S. P. XII, and which entitles the holder to a copy of the First U. S. P. XII Bound Supplement soon to be issued. It was not expected that this Supplement would be issued until about two and one-half years after the appearance of the U. S. P. XII, but changing conditions and wartime demands have necessitated its immediate publication. The Supplement itself will carry a similar order form for a Second Bound Supplement, should the latter be required before the appearance of the U. S. P. XIII.

It is expected that the First U. S. P. XII Bound Supplement will soon be released, and when it becomes available immediate shipment will be made without further cost to those who mail in their order cards as directed.

A. PH. A. TO MEET IN COLUMBUS SEPTEMBER 9-11, 1943

THE 91st Annual Meeting of the American Pharmaceutical Association will be held at the Deshler-Wallick Hotel, Columbus, Ohio, on Thursday, Friday and Saturday, September 9, 10 and 11. Affiliated organizations, including the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, the American College of Apothecaries, the American Society of Hospital Pharmacists, the Conference of Law Enforcement Officials, and the Conference of Pharmaceutical Association Secretaries will hold their meetings in conjunction with the A. Ph. A.

The selection of Columbus, Ohio, as the meeting place and the designation of September 9, 10 and 11 followed the recommendations of governmental agencies as to the time and place which would place the least possible burden on transportation facilities.

The 1943 meeting will be streamlined to the greatest possible degree and yet allow sufficient time for the consideration of the various war and post-war problems faced by pharmacists. General sessions of the Association and meetings of the House of Delegates and the Council will be held and the Sections will receive papers for presentation by title and subsequent publication in the Scientific and Practical Pharmacy Editions of the Journal. Committee chairmen are being asked to prepare and submit their reports well in advance of the meeting. It is hoped that members of this profession will not permit the pressure of the present emergency and the necessary curtailment of the convention program to interfere with the steady flow of scientific and professional contributions to the literature, but will prepare papers this year as they have in the past and place them in the hands of the respective Section secretaries.

NATIONAL FORMULARY CHANGES

A NUMBER of formulas in the N. F. VII using glycerin have been so modified as either to reduce or eliminate the quantity of glycerin employed.

Since glycerin is now restricted to 60 per cent of the normal (1941) amount for pharmaceutical uses, and because it is not unreasonable to anticipate further reductions, the saving of glycerin in pharmaceutical preparations is important.

Tabulated below is a list of preparations affected and the saving of glycerin that may be effected in each preparation.

Preparation	Per cent Reduction of Glycerin
Alkaline Aromatic Solution	50
Elixir of Iron and Strychnine	100
Elixir of Iron and Strychnine Phosphates	100
Elixir of Pepsin	60
Elixir of Pepsin, Compound	52
Elixir of Pepsin and Rennin	20
Elixir of Terpin Hydrate	50
Mixture of Rhubarb and Soda	20
Syrup of Ammonium Hypophosphite	83
Syrup of Calcium Lactophosphate	83
Syrup of Hypophosphites	83
Syrup of Hypophosphites, Compound	83
Syrup of White Pine, Compound	100

A number of other changes in monographs have also been made as well as corrections of a few errors appearing in the N. F. VII.

A complete copy of all changes may be obtained from the National Formulary Committee, 2215 Constitution Avenue, Washington, D. C., by sending an addressed stamped envelope with such a request.

SELECTED ABSTRACTS

Use of New Ephedrinelike Drug in Hay Fever and Asthma. A. J. Friedman and A. E. Cohen. *Northwest Medicine 42,* 138 (1943). Clinical tests on nethamine hydrochloride (levo-1-phenyl-2-methylethylamine-1-propanol hydrochloride) at the Allergy Treatment Clinic of the Louisville City Hospital and in the private practice of one of the authors showed that this drug benefited a number of cases of asthma and hay fever without producing the undesirable side-effects usually noted with ephedrine.

In order to obtain a comparison of nethamine hydrochloride and ephedrine sulfate, the two drugs were administered during alternating weeks to each of a group of 15 patients for about 10 weeks. Nethamine therapy brought about improvement in eight cases; there was no improvement in the others. Ephedrine caused improvement in seven cases, but failed to aid the others. Administration of nethamine after ephedrine had failed resulted in the improvement of four cases, while on the other hand the latter drug improved three cases after it was substituted for the former.

While it would appear from the above data that nethamine possesses but little clinical advantage over ephedrine, studies of their relative toxicities on the group of 15 patients revealed that nethamine caused nervousness in only three, whereas ephedrine produced this condition in 10 cases. As to other side-effects, nethamine caused insomnia in one case, nausea or vomiting in two, and palpitation in none; for ephedrine, these results were noted in, respectively, one, three, and two cases.

Another group of 13 cases of ragweed asthma seen in private practice received nethamine hydrochloride, and of these only four showed marked improvement. However, the same treatment given to 18 cases of ragweed hay fever devoid of asthmatic involvement resulted in the definite improvement of 12.

Thirteen cases of perennial asthma were treated with a combination consisting of nethamine gr. ¾, carbromal gr. 3, and theophylline isobutanol gr. 1½. Of these cases 10 showed good results and three poor.

In order to study the cardiovascular effects of nethamine, control observations were made on the blood pressure and pulse of a group of 10 medical students. No significant changes were noted following administration of the drug.

Sulphanilamide Sterilisation Without Admixture. P. J. Morrison. *Pharm. J. 96,* 146 (1943). By use of the technic described it is claimed that sulfanilamide can be sterilized readily and that it retains its free-flowing characteristics without the necessity of adding such other substances as zinc oxide, bismuth subcarbonate, calcium carbonate, etc.

Sulfanilamide powder and about one-third as much calcium chloride are separately spread out in thin layers in enamel dishes and dried at 40° for one hour in a hot air oven. At the same time, a number of McCartney's bottles (9 x 2.5 cm., with metal screw caps and inserts of rubber or other material capable of withstanding strong heat) and Dreyer's tubes (7.75 x 1 cm.), previously sterilized, are dried in the same oven. The McCartney's bottles are then filled to the three-quarters mark with the dried sulfanilamide, and are temporarily capped. The Dreyer's tubes are packed with the dried calcium chloride and corked lightly. The McCartney's bottles are then uncapped and inverted over rubber sheeting held firmly over the neck of each. Through a small hole which is then pierced in the sheeting, a calcium chloride tube is introduced into each bottle by impaling the cork upon a sharp forceps, followed by the removal of the cork and its replacement with a plug of cotton-wool.

The bottles are then capped and subjected to sterilization at 150° for an hour or longer in the hot air oven or oil bath. After the bottles have cooled the calcium chloride tubes may be removed under aseptic conditions, and the preparation is then ready for use.

Penetration of the heat was confirmed by placing melting point tubes filled with substances of suitable melting point within the calcium chloride tube.

Promulsin, a New Cellulose Derivative. T. D. Whittet. *Pharm. J. 96,* 139 (1943). Promulsin is described as a processed vegetable gum derived from cellulose, and is offered by the Watford Chemical Company as a powder or liquid. It is stated to be superior to methyl cellulose.

The author suggests the following formula for a syrup substitute: promulsin, 1 oz.; soluble saccharin, 30 grains; benzoic acid, 44 grains; water, to make 80 fl. oz. The benzoic acid is dissolved with the aid of heat in about one-half of the water, and the promulsin is added to the hot liquid, which is then set aside until a smooth mucilage is obtained. The soluble saccharin, in aqueous solution, is then added, followed by water to volume. Mix well.

Promulsin is unique among cellulose derivatives in that it does not react with phenylmercuric nitrate, a fact which suggests the following formula for fungicidal jelly: promulsin, 1.0 gm.; phenylmercuric nitrate, 0.1 gm.; water, to make 100 mils. The phenylmercuric nitrate is dissolved in 90 mils of boiling water; add the promulsin while the solution is still warm, mix well, add water to volume, and set aside until homogenous.

The author presents a table of 32 substances tested for precipitation with promulsin; of these, only three were positive. Another table compares the results observed with 11 reagents upon each of a group of cellulose derivatives comprising cellofas WFZ, cellofas WLD, P. M. B. 444, tylose SL 1000, and promulsin.

Variations in Phenol Coefficient Determinations of Certain Disinfectants. C. M. Brewer. *Am. J. Pub. Health, 33,* 261 (1943). The phenol coefficient of a phenolic type disinfectant is determined against *Eberthella typhosa,* unless the label states that some other organism has been used. Under the Federal Insecticide Act it is required that such disinfectants be used at dilutions equivalent in germicidal value against *E. typhosa* to a 5 per cent solution of phenol, i. e., at 20 times their phenol coefficient values.

Since it has been shown by Wright that different brands of peptones used to prepare the culture medium yield different phenol coefficient values, the Food and Drug Administration method prescribes the use of Armour's peptone prepared specially for disinfectant testing purposes.

A group of four disinfectants from different manufacturers yielded markedly different values when tested by the F. D. A. method against two cultures which differed only in that the peptone ingredient of one was from a different lot than the other. Further work made it evident that each of the disinfectants contained a synthetic detergent. Since Baker and coworkers found that the action of synthetic detergents is inhibited by phospholipids from various sources, additional experiments were undertaken to study the effect of the incorporation of soluble lecithin and of Brain Liver Heart Medium (Difco) in the two test cultures. This investigation made it evident that one lot of the prescribed peptone for the F. D. A. medium contained phospholipid substances which were lacking in the lot used to prepare the test culture giving the higher phenol coefficient.

The author concludes that the problem of finding a laboratory method for testing the germicidal properties of disinfectants which contain synthetic detergents, and which will be as reliable as the phenol coefficient method is for basic coal tar disinfectants, does not appear easy to solve.

Toxicity and Efficacy of Penicillin. H. J. Robinson. *J. Pharmacol. and Exper. Therap. 77,* 70 (1943). The penicillin used in the experiments reported was mainly a crude preparation equivalent to 60 Florey Units per mg. of solid; in a few cases a material having a potency of 300 to 400 units was employed. A Florey Unit is that amount of penicillin which when dissolved in 50 cc. of meat extract broth just inhibits the growth of the test strain of *Staphylococcus aureus.*

Crude penicillin was found to be toxic for mice when administered intravenously in 10 per cent aqueous solution in single doses containing 0.5, 1.0, 1.5, and 2.0 gm. per kg. body weight. Signs of necrosis at the site of injection indicated that penicillin in high concentrations is irritating. Penicillin of higher purity appeared to be less toxic than the crude preparation.

Subcutaneous injections of penicillin in daily doses of 1.6 gm. per kg. body weight over a 5-day period were well tolerated by mice, although 3.2 gm. per kg. doses proved lethal for some mice. The toxic dose was found by this method to be about 64 times the effective dose for the crude preparation.

Efficacy experiments showed that *in vitro* penicillin dilutions of 1 :1,000,000 inhibited the growth of all gram-positive organisms tested

except *Streptococcus viridans, Strep. lactis,* and one strain of *Staphylococcus aureus.* It was far less effective against the gram-negative group, dilutions of 1:1,000 being required to inhibit most of these. Strains of *Escherichia coli* and *Bacterium aerogenes* were unaffected by penicillin.

In vivo experiments on mice infected by intraperitoneal injections of strains of *Streptococcus hemolyticus* 1685, *Diplococcus pneumoniæ* (Type I), *Staphylococcus aureus* (Smith), *Salmonella artrycke, Salmonella schottmülleri* and *Bacterium shiga* revealed that penicillin in sufficient dosage gives excellent protection to mice against gram-positive organisms. On the basis of weight penicillin proved to be more effective than sulfanilamide, sulfadiazine, and sulfathiazole in, respectively, streptococcal, pneumococcal, and staphyloccocal infections in mice.

Penicillin had no apparent effect in experimental infections in mice caused by *Mycobacterium tuberculosis* (avian), *Trypanosoma equiperdum,* or the influenza virus PR8.

Role of Fluorides in Preventive Dentistry. F. A. Arnold, Jr. *J. A. D. A. 30,* 499 (1943). Studies of the dental caries experience rate made on the permanent teeth of selected 12-14-year-old white school children of three Illinois communities indicate that dental caries is markedly less in children who have used throughout life a water supply having a fluoride content which is not higher than about 1 p. p. m.

The communities selected for the study were Aurora, where the water supply has a fluoride content of 1.2 p. p. m. and the dental caries experience rate is low; Oak Park, where the water is fluoride-free, and because of the high economic level there has been an extensive amount of treatment of carious teeth; and Waukegan, where the water is also fluoride-free, and the percentage of treatment is much lower than that of Oak Park.

The concentration of fluoride in drinking water necessary to alter the incidence of dental caries is considerably lower than that which produces either the brown stain or the pitting characteristic of moderate and severe fluorosis. The author suggests the advisability of the addition of about 1 p. p. m. of fluorides to all public water supplies which are fluoride-free.

Aromatic Spirit of Ammonia—Loss of Ammonia in Storage. W. Forster. *Pharm. J. 96,* 127 (1943). In order to determine the loss of ammonia from aromatic spirit of ammonia, the author prepared three alcoholic solutions of B. P. strength, without essential oils, and also three similar solutions in distilled water. Each of these was periodically titrated for loss of ammonia, and the results of each titration are reported. The results are incomplete, since a period of two years elapsed between the last two titrations of the solutions. The data may be summarized as follows:

	Per cent loss in 8 months	Per cent loss in 2 years 8 months
No. 1—Strong Solution of Ammonia and Ammonium Carbonate in Alcohol	10.	36.2
No. 4—Ditto, in Water	5.34	17.55
No. 2—Strong Solution of Ammonia in Alcohol	8.55	32.
No. 5—Ditto, in Water	2.35	15.29
No. 3—Solution of Ammonium Carbonate in Alcohol	No loss	No loss
No. 6—Ditto, in Water	No loss	No loss

The author recommends that the bulk stock of aromatic spirit of ammonia and aromatic solution of ammonia B. P. C. be stored in small, inverted bottles closed with rubber stoppers, and in a cool place.

Sulfathiazole and Its Use in Infections of the Jaws. G. C. Albright. *J. A. D. A. 30,* 249 (1943). Observations made on patients indicate that sulfathiazole is a drug of great promise in dental practice. The cases treated by oral administration of the drug were as follows:

(1) Acute inflammation around third molars, with pain, swelling and, in some instances, elevation of temperature, 27 cases. Nearly all responded at once to treatment. In the majority of cases the tooth was removed on the fourth or fifth day. No local treatment was used before extraction.

(2) Infection following compound fracture of the mandible, 2 cases. The inflammation subsided in about 36 hours, and the patient was completely comfortable.

(3) Periodontal abscesses, 4 cases. Pain decreased, and an early tendency to localize was noted.

(4) Periapical abscesses, 6 cases. Response to the drug was not very marked. Pain did not subside readily, though inflammation abated. There was a tendency to early localization.

(5) Acute jaw infections with a tendency to deep bone infection, 5 cases. There was a reduction of pain and swelling, with a return to normal in from 36 to 72 hours.

(6) Temporomandibular joint infections, 3 cases. Two cases responded to sulfathiazole; the third required other treatment after a failure to respond.

(7) Acute infection following tooth extraction, 6 cases. All cases responded to treatment in from 18 to 24 hours.

The local application of sulfathiazole to sockets immediately following tooth extraction in more than 300 cases resulted in more rapid healing with less after-pain and with very few dry sockets.

In cases of dry socket sulfathiazole failed to produce a response either when packed into the socket or administered internally. However, the establishment of a new blood clot in which the drug is incorporated produces relief of pain and promotes rapid healing.

SOLID EXTRACTS

Notes of Interest Gathered at Random

The efficiency of modern drugs and surgical skill is attested by figures released by the U. S. Navy and the Marine Corps. From Pearl Harbor to March 31, 1943, 97 per cent of all men wounded have recovered.

Of all Navy and Marine personnel wounded only 2.6 per cent died subsequently. Fifty-three per cent. were returned to duty. Still under treatment as of March 31 were 43.5 per cent. Invalided from service were 0.9 per cent.

The breakdown of the figures shows: Naval officers wounded, 61.6 per cent returned to duty; 35.9 per cent were still under treatment; .2 per cent were invalided from service; only 2.3 per cent died.

Of Naval enlisted men wounded, 60.4 per cent returned to duty; 35.4 per cent were still under treatment; 1.4 per cent were invalided from the service; and 2.8 per cent died.

Of Marine officers wounded, 46.8 per cent returned to duty; 51.6 per cent were still under treatment; and 1.6 per cent died. None was invalided.

Of Marine enlisted men wounded, 41.5 per cent returned to duty; 55.9 per cent were still under treatment; .4 per cent were invalided from service; and t2.2 per cent died.

In the original occupation of North Africa, the only deaths were those of men killed outright or so badly wounded that nothing could have saved them. This was also true in other theaters of war.

AJP

The isolation and crystallization of the antianemic Bc vitamin—half a million times more potent than fresh liver—which may speed convalescence from many illnesses because of its blood regenerating effects, was recently announced.

The announcement, contained in the April 30 issue of Science, describes the new vitamin Bc as definitely a member of the Vitamin B Complex.

The subletter "c" has been added to the name to represent the thousands of chicks on which experimental studies have been made.

Six men signed the paper announcing the isolation and crystallization of the new vitamin, fourteenth in the aristocratic vitamin family. They are Drs. Pfiffner, Binkley, Bloom, Brown, Bird and Emmet, all members of the Research Staff of Parke, Davis & Co.

The existence of the antianemic Bc vitamin was first announced by Professor A. D. Hogan and his associates at the University of Missouri. They observed that chicks placed on a supposedly sufficient diet failed to grow and developed severe anemia, and that this could be cured by adding crude liver extract. Dr. Hogan and an associate, Dr. B. L. O'Dell, were able to make a 300-fold concentration of this antianemic factor from liver. Their work became the basis for extensive research which finally led to the isolation of this antianemic vitamin in pure form.

AJP

Pharmacists of the United States have already contributed more than 110,000 ounces of quinine and other cinchona derivatives, or between three and four tons of these antimalarial drugs, to the National Quinine Pool, and the packages are still rolling in to the American Institute of Pharmacy, 2215 Constitution Ave., Washington, D. C. The amount on hand is the equivalent of some 9,600,000 five-grain doses and would have a market value of about $88,500 if you could buy it, but with the Dutch East Indies in the hands of the Japs and our source of supply of this drug cut off, the quinine which has been collected is priceless as it is irreplaceable.

AJP

The release for commercial use of tyrothricin, a powerful, recently-developed "antibiotic" agent for treatment of infections in humans, has been announced by the Mulford Biological Laboratories of Sharp & Dohme. This preparation is derived from the earth; specifically, from Bacillus brevis, an organism found in the soil, and was originally isolated by Dubos of the Rockefeller Institute.

Tyrothricin is not harmful when administered topically. Its toxicity for tissues is quite low and the solution may be instilled into body cavities without untoward effect.

The new antibacterial preparation is used locally for sterilization of wounds, indolent ulcers of the skin and body cavities such as the

paranasal sinuses, urinary bladder and pleural cavity. In this respect tyrothricin exhibits a definite advantage over the sulfonamide compounds, which lose their effectiveness in the presence of pus. In spite of the fact that tyrothricin is both dangerous and ineffective if administered intravenously, there is no evidence that the material is absorbed from local areas.

AJP

Government authorities are still seeking new sources of quinine. As cinchona is native to South America, it is natural that large plantations be fostered there. Specifically, Guatemala and the United States have entered into an agreement whereby the largest plantation in the Western Hemisphere is being developed in a 17,000-acre area in the District of San Marcos. The plantation is known as El Porvenir, which, in Spanish, means the future.

AJP

Ordinarily, fine jewelry would call for gold, silver or platinum. Today the accent is on palladium, which is being accepted quite readily as a white precious metal, an alternative for war-needed platinum.

AJP

It is now reported that more than 600,000 doses of a modified type of yellow fever vaccine have been administered without resultant evidence of jaundice or other untoward reactions. Thus, our armed forces about to enter tropical battle areas may receive adequate protection without fear of undue consequences from the prophylactic itself. The vaccine now used is an aqueous extract of 10 to 11-day-old chick embryos previously infected with the virus of yellow fever.

AJP

Casual thinking would lead us to believe that all sailors are surfeited with sunlight. Such is not the case, however, on our battleships, for, in these floating cities, many men stationed below decks receive little or no direct sunlight, especially so when in battle zones and on constant duty at their posts. To offset this, the new U. S. S. New Jersey will have ultraviolet ray apparatus placed in various spots in the interior of the vessel so that men on duty there may obtain their vitamin D. Special lights, too, will be placed in the sick bay. Such has been the practice, before this, on submarines, but the larger vessels have been ignored.

In the field of containers and closures, metal was the first war casualty. Now plastics, and even glass, are feeling the pinch of necessary restriction. Next in line for use in this respect we find ceramics. Even though costly, ceramics must be turned to for the purpose of closures, and one manufacturer has devised a method of lining ceramic screw caps for bottles with a plastic material so that the threads of the closure do not grind when in use. This furnishes another excellent example of necessity being the mother of invention.

AJP

Penicillin is one of the newest powerful antibacterial agents to take its place in the long, strong line of medical substances being utilized against infection. At the present time, at least, because of the limited quantity at hand, it is not to take the place of the sulfonamides, but is to be used in cases in which its action is almost specific.

For instance, Mycobacterium tuberculosis, certain streptococci, and the more common gram-negative organisms are better attacked by some substance other than penicillin, but infections due to Staphylococcus aureus, Streptococcus pyogenes, susceptible strains of Diplococcus pneumoniæ, Neisseria gonorrhoeæ, Neisseria intracellularis, and infections associated with gas gangrene are ideal proving grounds for this new-found chemotherapeutic agent.

AJP

Nervous indigestion is the bane of modern civilization, but just how much the state of one's mind affects the state of one's stomach has been revealed in an experiment on a patient whose throat condition was such that it was necessary for him to be fed through an artificial opening in his stomach. Through this opening the color of the subject's stomach mucosa could be observed. Sadness, dejection and self-reproach produced a pallor of the gastric mucosa, decreased acidity and motor activity. Anger and similar emotions brought a surge of color to the mucosa, increased the production of acid and produced vigorous contractions. And it is well known that such violent changes in the lining of the digestive tract can lead to hemorrhage, to perforation, and to peptic ulcer.

BOOK REVIEWS

Urine and Urinalysis. By Louis Gershenfeld, P. D., Ph. M., D. Sc. Second edition. 304 pages, illustrated. Lea & Febiger, Philadelphia, Pa., 1943. Price: $3.25.

The second edition of this book by an eminent authority on the subject is of value to every physician, pharmacist and clinical technician. Unlike so many texts this edition is completely revised and not just a reprint with additions.

The subject is presented very thoroughly beginning with a brief historical consideration in the introduction. In Chapter I is discussed at length the internal structure of the kidneys and their function. Chapter II includes the definition of urine; a discussion of micturition; a detailed consideration of the collection of samples of urine for the various types of examinations; and its preservation until examined. Further chapters thoroughly discuss the physical or microscopic characteristics, the chemical composition and abnormal or pathological constituents of urine.

Part II of the book deals with urinalysis. Qualitative and quantitative tests as well as the microscopic examination are considered. The author is well able to present this subject, having personally performed over 40,000 urinalyses. Special urinary tests for urinary calculi, kidney function and for the presence of certain elements comprise Part III.

In addition to the revision of the old text material many new tests have been added. Among them are included tests for alcohol, sulfanilamide and related compounds, and vitamin C. In the apparatus described in the appendix, photoelectric colorimetry is described in brief with a bibliography. The book is well-illustrated and contains many references. For its size it contains a wealth of material, including all that is current. The use of this text does not involve to too great a degree the use of many supplementary texts. All the essential information has been condensed in a satisfactory form into the one volume.

M. O. HOLLAND.

Practical Emulsions. By H. Bennett, First edition. 462 pages. Chemical Publishing Co., Brooklyn, N. Y., 1943. Price: $5.00.

This book should prove of value to the persons who must apply their knowledge of emulsions in industry and elsewhere. Both beginners and specialists should profit from it. The first part deals with the various kinds of emulsifying agents with specific examples and includes an extensive list of such agents. Incorporated also are chapters on the theory of types of emulsions and foams and a list of the many possible emulsions. Other chapters include a list of demulsifying and defoaming agents which is of value in certain fields; a discussion of stability, of general technical emulsions, and of dispersing and wetting agents.

The editor-in-chief, as technical director of one of the leading and oldest manufacturers of emulsifying agents and emulsions, presents data and methods culled from his own extensive experience. Included also are specially selected references from other authorities.

The second part of the book presents many practical formulas for agricultural spray emulsions, cutting oils, soluble oils, miscible oils, emulsifying agents, bituminous emulsions, cleaners and soaps, cosmetic and drug emulsions, defoaming agents, food emulsions, gasoline emulsions, lacquer emulsions, leather treatment emulsions, lubricant emulsions, medicinal emulsions, paint emulsions, paper processing emulsions, polish emulsions, resin and rubber emulsions, textile emulsions, waterproofing emulsions, wax emulsions, dispersions and micellaneous. These are derived mainly from the Chemical Formulary and other sources.

Unfortunately the book has been printed on a fine glazed paper making it both expensive and heavy in weight. The binding is faulty with loose pages falling out.

For a beginner in the field or for one who desires the bases for various preparations in industry it should prove useful.

M. O. Holland.

The Apothecary-Chemist, Carl Wilhelm Scheele. By George Urdang. 71 pages, paper-bound. American Institute of the History of Pharmacy, Madison, Wisconsin, 1942.

The bicentennial of the birth of the great Swedish apothecary-chemist, Carl Wilhelm Scheele, was observed in December, 1942. On

that occasion the American Institute of the History of Pharmacy, under the direction of George Urdang, published this booklet which is a compilation of facts and pictures pertaining to this great man who contributed so much to the scientific knowledge of his time. Extracts from his letters and laboratory notes afford the background for a time-table of his many and varied experiments and discoveries which, interestingly enough, range from A (acetic acid, which he distilled from lignum guajaci in 1774) to Z (zinc, and its reactions when dissolved in acids, reported before 1768).

The volume is not intended to replace a profound biography of Scheele, but is, rather, a well-presented survey of the most important data concerning this phenomenal man. The pictures are excellent, and the entire tenor of the work is in tribute to his memory, and in respect for his honesty in work, his true love for science, and his remarkable attainments.

JOHN E. KRAMER.

The Pharmaceutical Recipe Book. Third Edition (P. R. B. III). Prepared by the Recipe Book Committee of the American Pharmaceutical Association. 551 pages, including index. Mack Printing Co., Easton, Pa. Price: $5.00.

This new edition of the Recipe Book is a complete revision of the former edition. It is divided into eleven parts as follows: I Pharmaceutical Formulas, II Flavoring Extracts and Imitation Flavors, III Certified Coal Tar Dyes, IV Cosmetics, V Technical and Miscellaneous Formulas, VI Table of Average Doses, VII Antidotes for Poisons, VIII Table of Solubilities, IX Table of Synonyms, X Latin Terms and Abbreviations, XI Vitamin Synopsis.

Considerable improvement has been made in the sections on formulas useful in dentistry, chiropody and veterinary practice. A number of new cosmetic formulas are also presented. The pharmacist will find most useful, however, the large number of technical formulas covering such diversified products as insecticides, inks, metal polish, etc. Over 1400 formulas are presented in all and the book should be a part of every pharmaceutical library.

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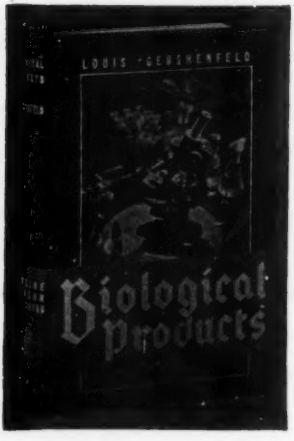

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